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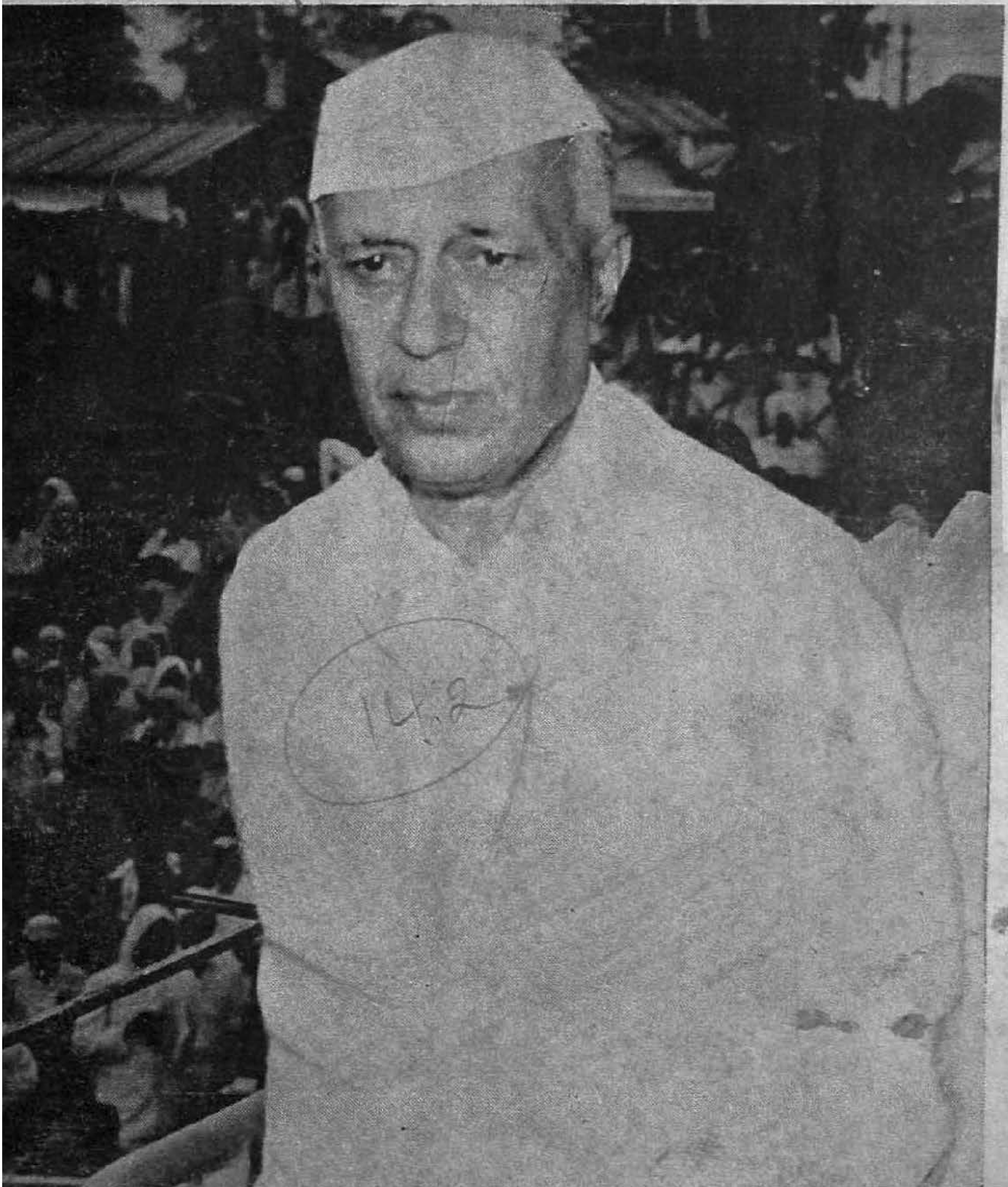

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MADRAS
HEALTH EDUCATION

MADRAS HEALTH EDUCATION

1 0 OCT 1964

Vol. III JANUARY, FEBRUARY, MARCH 1964 No.

CONTENTS

PAGE

1. PUBLIC HEALTH AND COMMUNITY 1
—*Dr. (Mrs.) H. M. Sharma.*

2. VACCINATION OF THE NEW BORN AGAINST SMALL POX. 6
—*Dr. A. Ramachandra Rao.*

3. RADIO EFFECTIVEL YUSED IN HEALTH EDUCATION 19
—*G. Kittu Rao.*

4. HEALTH PROGRAMMES IN MADRAS STATE 21

5. RAGI RECEIPES 34

HEALTH PEOPLE

MAKE

HEALTHY NATION

Nation in Emergency

Can't Risk its Health

You

Can prevent Smallpox, Typhoid, Diptheria, Tetanus and Whooping Cough.

Get yourself immunized against these.

Nation should be strong and Healthy to Drive out the Enemy and lead us to Victory.

PUBLIC HEALTH AND COMMUNITY

DR. (Mrs.) H. M. SHARMA M.B.B.S., B.S.SC., M.P.H. (Haward),
Director of Public Health, Madras.

"The health of a community depends upon the standard of living its education and the organised public health services designed to prevent disease and ensure early treatment."

Health is of the most precious commodity that we possess on earth. A Sanskrit saying in our ancient texts on medicine states as follows:—

" *Dharmartha Kama Moksham Arogyam Moola Uthamam* ": which means that for the artistic, ethical, economic and spiritual development of man, the first pre-requisite is(?) Arogya or Health. This ideal has embodied in the constitution of India which regards the raising the level of nutrition and standard of living of its people and the improvement of Public Health, as primary duties of the State.

The constitution of the World Health Organisation also emphasises that "the enjoyment of the higher attainable standard of health is one of the fundamental rights of every human being". To-day, almost all the countries of the world accept that health is one of the main responsibilities of Government.

You may ask why is health given such importance in the programmes of national development. It is because disease impose many heavy burdens upon citizens in the form of disability, premature death and the need for providing facilities for the care of the sick. Sickness not only takes away the joy of life, but also reduces the earning capacity of man. Lowered earnings, in turn, result in his living a sub-minimal level of living which again pre-disposes him to illness. There is a vicious circle.

It is a common place that the chief wealth of a nation is the health of the people, and where the level of public health is low the country remains inevitably backward.

"*Man Power*", of which we hear so much now-a-days does not consist in more numbers, but in physical efficiency of individual human beings who collectively constitute a nation. Both production and wealth and the military strength of a country depend on man power.

The average expectation of life in our country to-day is estimated tentatively at 41·7 for males and 42·1 for females, as against about 65 and 75 respectively in Western Countries. But in population strength she is next only to China. One in every five persons in the World is an Indian. China and India put together accounts roughly for half the population of the World. All the same in point of Public Health are efficiency of a man power she is far inferior to many countries in the World. Her death rate is high; infant mortality is terrible; also maternal mortality.

Generally children up to the age of 15 do not earn and the investment made on a child during his non-productive phase of life is considerable. The highest earning capacity is usually reached at about the age of 35 but most of the deaths that occur in our country are well within that age. A considerable sum of money is spent on education and training but it is not productive of dividends. There is a tremendous wastage of human material. That is why maintenance of improvement of the health of people is such an important factor in our developmental programmes.

Epidemics like cholera, smallpox, plague take a heavy toll of human life in this country. Malaria and tuberculosis are equally devastating in their effects. A variety of other fevers and diseases account for a considerable percentage of deaths. No country which sustains loss of man power can make its mark as a prosperous one. One writer has estimated that the average

number of deaths in India due to preventable diseases in 6 millions a year. The terrible incidence of diseases both epidemic and non-epidemic has to be reduced drastically if India is to achieve the higher level of national health.

Causes for Low Public Health

In this connection it is pertinent to refer briefly to the main causes which have lead to the unsatisfactory health position of this country. Of course no country is free from disease, and the human species is heir to numerous ills. But it cannot be denied that the ravages of diseases can be minimised if sufficient care is exercised by the people. One of the primary causes that has been often mentioned as responsible for the low state of Public Health in India is low standard of living.

India occupies the last place in regard to income. Even the smallness of individual incomes would not, however, have produced such deplorably low standards of living if they were wisely spent. The massess in India are not noted for wise spending, either because of their ignorance or because of some traditional habits. While it is true, that food occupies an important place in and forms a big slice of the expenditure of average Indian family, there are other items on which a disproportionate amount of money is spent. In many cases social functions and religious ceremonies account for a considerable proportion of the expenditure of the average person. The usual diet of a South Indian is not particularly rich in nutritional context and hence his power of resistance to disease is slow.

For a large number of people in South India, the average consumption of callories range from 1,500 to 2,300, while an adult actually needs 2,800 callories per day. Broadly speaking no less than 60 per cent of the total population is undernourished. One-third of the total population in this country it is said, do not have square meal a day. In these circumstances it is not surprising that the average Indian possesses a distressingly low power of resistance to diseases. Further even this meagre diet is not a balanced one. It is said that food has three purposes to serve: (1) to supply energy, (2) to provide the material for building the body and (3) to provide vitamins. The diet has to be so balanced

that all these purposes will be served by what one eats. But a vast majority of the Indian population pay no regard to the quality or quantity or kind of food they consume and their result is that they render themselves susceptible to disease of various kinds.

Illiteracy

Another cause for low health is illiteracy. More than 70 per cent of the population are illiterate and are not in a position to understand what is best for the promotion of public health. Education, in the sense of improving the culture and general knowledge of the masses, is one of the factors in the promotion of public health. There may not be much apparent connexion between the state of the public health of a country and the state of its literacy. Religious superstition, conversatism and adherance to time-worn customs are among the other causes that militate against maintenance of proper standards of sanitation and public health. It is frequently heard that villagers in some parts of the country generally do not show much enthusiasm to adopt preventive or curative measures in times of an epidemic and do not readily respond to such measures when sponsored by the official agency but prefer to leave things to chance. The Hindu talks of " Karma " and the Muslim talks of " Kismet ". In some places, diseases are attributed to the Gods, and a number of performances are undertaken to propitiate the Gods with much greater enthusiasm than is shown in seeking proper medical or public health assistance. The mental condition which thus taken suffering for granted or which prefers to leave things to chance can be changed only by education in the proper sense and enlightenment through propaganda. Apart from this, the average Indian village itself is a breeding ground for all kinds of disease. One English author has observed that a traveller can smell his way in an Indian village. There are no sanitary conveniences and the common tank is used for all purposes and forms a breeding ground for mosquitoes. Speaking about the Indian village, Mr. Brayane has said: " By his (villager) insanitary habits of living he draws upon himself much avoidable physical suffering with its attendant evils of low vitality and incapacity for persistent and strenous labour and a sombre outlook of life ". Few people can disagree with this statement

though it will be wrong to say that the villagers alone are responsible for this state of affairs. He is more a slave of his environment and other circumstances than their master. The low vitality of the masses has been referred to by more than one writer. The Royal Commission on Indian Labour has said that the Indian Industrial worker produces less per unit than the average worker in any of the countries claiming to rank as a leading industrial nation. Similarly the out turn of the Indian agriculturist is less than that of an agriculturist in England, Russia, Australia or New Zealand. Sir M. Visveswariah has said that the earning power of a Jap was three times that of an Indian. Economists have classified population on the basis of vitality as high, medium and low. India is included in the last category. If this state of affairs is allowed to continue, then the prospects of India attaining her stature as a healthy nation seem remote. With the dawn of independence for the country, the masses have to be awakened and efforts must be made to see that they make amends for their past neglect by concentrating, among other things, on the means and methods of promoting the nation's health.

Conclusion

The problem calls for co-ordinated all-out effort on a number of fronts, educational, economic, social and so on. But whatever be the steps that Government may take to promote public health they alone cannot yield the desired results unless the masses realize their value and importance and co-operate. The latter have to realize that the old order in which things were allowed to drift is fast passing and in the new order, every person who does not devote enough attention to the preservation of his own health as a fundamental precaution to preserving the health of the community of which he is a part will be doing a disservice to himself, his community as well as to his country. The Government must devise plans and spend money in carrying them out—that is their responsibility. But the rest depends upon the people themselves. The health staff and the medical staff will advise and assist them in fighting disease. But it is for the people to take advantage of those advice and assistance.

VACCINATION OF THE NEW BORN AGAINST SMALL POX

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Introduction

As in Madras City several local authorities as well as State Government, might have provided in their Health Acts compulsory vaccination of all children born in their localities be for the age of six months. This six months limit was probably fixed on the assumption that children under the age of six months do not usually get smallpox, because of the immunity they might have inherited from the mother, through the placenta, and also that the infants might not develop the mechanism to prepare the anti-bodies against the introduced antigen. In Madras City, the Health Officer has the powers to vaccinate any person or a child at any age, if the City is threatened with an epidemic of smallpox, or the house or the neighbourhood is infected. Yet as a routine, children are vaccinated by the end of sixth month.

In 1960, Ramachandra Rao had found that among a series of 1,000 consecutive cases of smallpox, admitted to Infectious Diseases Hospital, Madras, that nearly 13 per cent of the total cases of smallpox amongst them was very high too. This made the authors to start a pilot project of vaccinating the new-born as a measure—

(i) to reduce the incidence of smallpox in this age-group and save them from death due to smallpox;

(ii) to find out whether the new-born have any placenta at birth;

(iii) to find out whether the infants have the mechanism to prepare anti-bodies (as can be seen by successful primary takes); and

(iv) to find out whether this immunity conferred by this neonatal vaccination will resist smallpox infection if they are exposed to the disease and how long this immunity lasts.

This procedure has an added advantage. It is our experience that majority of children born in hospitals and nursing homes, are not easily traceable for vaccination at the age of six months due to various reasons, with the result these babies escape vaccination for a considerable period and forms potential nidus for starting of epidemics of smallpox. So vaccination of the new-born at least of hospital births will ensure 100 per cent protection of this population.

Materials and methods.

One of the maternity homes run by the Corporation of Madras was selected for this work. This Home has 36 beds and takes only normal labour cases. Usually the mothers are kept for five days confinement.

A Special Sanitary Inspector, who is a qualified vaccinator, has been posted exclusively for this work. Every baby born in this Home was vaccinated on the third day of birth. Premature babies and those who are in the opinion of the Medical Officer in charge of the Home, are too debilitated to be vaccinated were not vaccinated. This work was commenced on 19th October 1959 and this report includes the vaccinations done up to 24th April 1961. All the babies are followed to the moment and so that last baby was followed for nearly one year and eight months.

The vaccine lymph used is the Glycerolated Calf lymph manufactured by King Institute of Preventive Medicine, Guindy, Madras. The vaccination is performed by the Rotary Lancet. The insertions were made on the lateral aspect of the arm. The first 100 children had only one insertion, and the remaining had two insertions, in some both on the same arm and in some one on either arm.

The vaccination takes were examined by the Inspector on the 5th, 7th and 10th days and some of them were verified even by the Sub-Assistant Health Officer and the Assistant Health Officer too.

Records were maintained of the immunity status of mothers as evidenced by the vaccination scars, history of vaccination and history of previous smallpox attacks.

Records were maintained of the reaction of vaccination any complications, deaths with probable causes (since certification of deaths is not compulsory in Madras City) that have occurred amongst those children within one month of the birth. Special investigation have been made as to the exposure of smallpox in the household by these babies after this neonatal vaccination whether and when they developed smallpox subsequently.

Recores were also collected as regards neonatal deaths with probable cause amongst the babies born in the same Maternity Home for the calendar year 1958 for comparison with neonatal deaths that have occurred during this period of study.

Results

During this period from October 17th, 1959 to April 24th, 1961 2,698 babies were born in this Maternity Home. Of these, 163 were not vaccinated due to various reasons mentioned above. Actually, therefore, only 2,535 were vaccinated on the 3rd day after birth. Of these vaccinated 302 babies were not available for verification of the reactions and so had to be excluded from the study.

Statement 1 shows the number of children born, number vaccinated, number verified, the type of insertion made, the nature of the reaction observed, etc.

The overall success rate was 79·1 per cent and the insertion success rate was 68·7 per cent. There was not much difference whether vaccination was done on one arm or two arms. Babies who had no takes, numbered 454 and of these 128 were vaccinated subsequently after four or five months and of these secondary vaccination 126 were successful.

Statement 2 shows the immunity status of the mothers either due to revaccination or previous attacks of smallpox and its relationship. There was no appreciable difference in takes between

children born of mothers who gave history of recent revaccination and those born of mothers who were either never revaccinated long before. But there seems to be some difference in the takes between the babies born of mothers who had smallpox within five years. There is some reduction in the success take in the former group.

Statement 3 shows the effects of this neonatal vaccination on resistance to smallpox when those children were actually exposed to smallpox infection in the household 36 of these children were actually exposed to smallpox infection in the house after vaccination. Of these 36, four were unsuccessfully vaccinated and three of these developed smallpox of severed type and died. Of the remaining 32 successfully vaccinated babies who were exposed to smallpox, three developed smallpox but very mild modified attacks and they had very few lesions and for want of laboratory facilities, these three were diagnosed as smallpox only clinically.

Statement 4 shows the deaths that have occurred amongst the babies vaccinated within one month after birth during the period of study compared with the deaths that have occurred amongst the babies born in the same Maternity Home within one month after birth during the year 1958. The overall death-rates were 2·9 per cent during the study period as against 3·4 per cent in 1958. Excluding the babies that were reported to have died due to prematurity, debility and neonatal asphyxia, etc., the death-rates work out to 0·7 per cent and 1·2 per cent respectively. With reference to individual causes of death, there were two deaths in the study period, the causes of which were not responsible for any death during 1958.

Discussion

We have found that was an initial vaccination-success rate of 79·6 per cent and a further secondary vaccination-success rate of nearly 100 per cent in 128 secondary vaccination done 4–5 months later. Though we cannot say for definite whether these 126 out of 128 secondary vaccinations would have had successful takes if vaccination was repeated immediately. Yet there is a possibility that all or majority of the " No takes " in

the original vaccination might have been the result of bad technique rather than due to the transmitted immunity. However, this high success rate of neonatal vaccination shows that very little immunity was transmitted through the placenta, of those reactions mean that they had no immunity before vaccination. The ideal procedure would have been to estimate the anti-body titres at birth and after vaccination. Work was done on this, though in a very limited scale by Kempe and Bensen (1953) who found consistently high titres in infants in a significant number of cases. They also found infants of mothers vaccinated within the past five years, have significantly higher titres than those born mothers who were vaccinated more than five years ago. In this work, they have collected cord blood of the babies at birth. The same authors continuing the work vaccinated four new-born babies on the 5th day of life. Before vaccination two of them had very high titres of anti-bodies in the serum while the other two had low titres. The two with high titres failed to show any skin lesion with vaccination while the other two had typical vaccinia takes. This shows that all the babies who had takes in our series had not had any transmitted immunity, whatever be the reason. It is rather surprising that even in this country where every one has a higher level of basic immunity, very little is transmitted to the offspring.

With reference to the immunity status of mothers, all of them were primarily vaccinated and 513 of them gave history that they were revaccinated within one year before the date of confinement and 92 of these showed some evidence of vaccination too. But, of course, we do not know what type of " take " they had. We did not find any appreciable difference in the " Success takes " of the babies between those born of mothers who had vaccination within one year before confinement and those born to mothers who had revaccination before.

But in the case of children born to mothers who had smallpox within five years before confinement, the vaccination success rate seems to be less when compared to that in those who were born to mothers who had smallpox beyond five years before the confinement and others who never had smallpox at all. The reduction is nearly by 15 per cent.

So it is evident that, both as a result of this work as well as the clinical experience as regards incidence of smallpox in babies under the age of six months the babies may not inherit far safer to get them vaccinated as soon after birth as possible.

The next question is whether there is any harm in doing vaccination in the new born. This work showed nothing untoward as happened in these two thousand and odd babies vaccinated on the 3rd day and further, there was no increase in the neonatal mortality rate when compared to previous year.

In general, the neonatal death rate is less during this period when compared to that in the year 1958. On comparing the causes of deaths, excluding those children whose cause of death was put as prematurity, debility and axphyxia and died within three days, the neonatal fatality rate from other causes also is definitely less during this period of study.

There are two instances where one died of " Septicæmia " and the other of " Lower Respiratory Infection ". In 1958 there was no death due to those two causes. The history of two deaths is as follows:—

(1) The child was as usual vaccinated on the third day after birth with two insertions. The child developed primary take and supposed to have died of fever with convulsions. The Medical Officer has put the cause of death as ' septicæmia '.

(2) The second child developed some difficulty in breathing two hours after vaccination. The child was removed to the Women and Children Hospital, Egmore, for expert services. The same night the child was removed to the General Hospital, as a case of ' Lower Respiratory Infection (Viral) ' and the child died in the General Hospital, 18 hours after vaccination.

It is doubtful whether these two deaths could be attributed to vaccination at all. So there does not seem to be any unusual or untoward accidents that could be attributed to neo-natal vaccination.

As regards the number of insertions, it is a controvertial question. I am sure the immunologists and virologists would agree that the greater the innoculum of virus injected at one

time into the skin, the greater the immune response at least to a certain limit. It is felt, the immune response is directly proportional to the number of susceptible cells of the host that get infected with the virus. Further, we have clinical evidence to show the incidence of smallpox is far less in persons who have been vaccinated with more number of insertions. It is ideal to give four insertions to the new-born babies too, but we have to consider the public reaction also. Naturally parents do not like a new-born baby to be vaccinated with four insertions. The minimum is two insertions. It has been found here in the cases of smallpox that developed amongst these vaccinated babies, though the incidence is low, that even two insertions may not prevent a child from getting smallpox for two years. So it is absolutely essential either the baby should have four insertions or should be re-vaccinated before the end of the second year of life if the child had only two insertions at birth. It is also clear from the figures the insertion success rate is greater among the two insertions group than in the one insertion group, the rate being 69·8 per cent and 57·3 per cent. There is always greater possibility of atleast one insertion becoming successful if more than one is given. This is a very important consideration to stress the need of giving more than one insertion.

Summary

Two thousand four hundred and fifty-five new-born babies were vaccinated against smallpox on the 3rd day of birth in a maternity home in Madras City as a pilot study. The overall cases success rate was 79·1 per cent which shows that the babies at birth may not have much immunity against smallpox transmitted from the mother. An attack of smallpox within five years before the day of confinement, seems to reduce the success rate in the offspring of those mothers whereas no such reduction is noticed in those children born of mothers who have reported to have been re-vaccinated within one year before confinement. The Neo-natal Vaccination was not associated with any complication or increased Neo-natal mortality. During the period of study, the City has experienced a severe epidemic of smallpox and 32 of the successfully vaccinated children were actually exposed to smallpox infection in their own houses and

three of them developed smallpox within two years after the vaccination but very mild modified attacks. Whereas the three children who were unsuccessfully vaccinated and were exposed to smallpox infection, died of confluent smallpox.

Conclusion :

1. The study suggests that children at birth do not seem to possess much immunity since 80 per cent of the new-born babies had successful primary takes with vaccination on the 3rd day of birth.

2. With two years of a follow-up, only three children out of 1,779 successfully vaccinated children developed small-pox and that too vary mild modified types in spite of the fact that the City had at the time one of the major epidemics of smallpox. This shows that the Neo-natal Vaccination does confer immunity and that the baby even at birth has the mechanism to prepare immune bodies.

3. An attack of smallpox in the mother too may not transmit much immunity to the baby, though it may be better than a recent re-vaccination as is done now here.

4. No untoward reactions or complications have been noted after neonatal vaccination and no unusual neonatal mortality was observed amongst these, on the other hand it is less when compared to neonatal mortality of the previous year.

5. In view of the fact that the incidence of smallpox is high in this country even in children under 6 months of age and the case fatality amongst them is very high and that this study showed that children at birth have very little immunity as evidenced by the high success rate of neonatal vaccination. It is suggested that till such time, smallpox is eradicated from the country, the legal age limit for primary vaccination should be lowered and that every child should be vaccinated as immediately after birth as possible, preferably not later than one month of age.

STATEMENT 1.

Showing the number of babies vaccinated, the number of insertions, the vaccination case success rate and insertion success rate.

Period of study. (1)	Number of babies born alive in the Maternity Home during the period. (2)	Number of babies not vaccinated on the 3rd day after birth. (3)	Number of babies actually vaccinated on the 3rd day. (4)	Insertions. (5)	Number of babies. (6)	Number of babies vaccinated but not available for verification of reaction. (7)	Number actually verified. (8)	Number of cases successful. (9)	Case success rate. (10)	Number of babies in whom only 1 insertion was successful. (11)	Single insertion success rate. (12)	Number of babies in whom not insertions were successful. (13)	Two insertions success rate. (14)	Insertion success rate. (15)	(16)
									per cent.		per cent.		per ceut.	per cent.	per cent.
17th October 1959.	2698	163	2536		2535	302	2233	1779	79.6	519	23.9	1260	55.83		
				1 insertion.	100	4	96	55	57.3	55	57.3	..	—	57.3	57.3
				2 insertions on same arm.	1317	176	1141	936	82.0	256	22.4	630	59.6	70.8	69.81
				2 insertions one on each arm.	1118	122	996	788	79.1	208	21.0	560	58.26	8.7	

STATEMENT 2.

Showing the relationship between the immunity status of the mothers and the vaccination takes of the new-born babies.

Serial number.	Immunity status of the mothers.	Number.	Number of babies who had success rate.	case success Rate.
(1)	(2)	(3)	(4)	(5) per cent.
1	Mothers who had smallpox within 5 years before confinement	23	15	65.2
2	Mothers who had smallpox beyond 5 years before confinement	72	58	30.5
3	Mothers who gave history of re-vaccination within 1 year before confinement but no evidence	421	328	77.8
4	Mothers who gave history of re-vaccination within 1 year before confinement and in whom some marks are seen ..	92	69	75.0
5	Mothers who had neither smallpox nor re-vaccinated within 1 year before confinement ..	1,625	1,309	78.1
	Total ..	2,233	1,779	70·6

STATEMENT 3.

Incidence of Smallpox in the Vaccinated Children.

Number of babies vaccinated on the third day of birth and exposed to risk of Smallpox infection in their houses.	Number of babies in column 1 who developed small-pox.	Details of cases number of insertions and the relationship with vaccination and attacks. Serial number	Date of vacci-nation.	Number of insert-ions.	Vacci-nation take.	Date of admission for small pox.	Date of death.	Type of attack.	Results.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Unsuccessfully vaccinated. 4 ..	3	1.	15- 4-60	2	Failure	28-9-60	12-10-60	Comfluent.	Died.
		2.	10- 1-60	2	Do.	16-4-61	18- 4-61	Comfluent.	Do.
		3.	1-11-59	2	Do.	14-2-61	14- 2-61	Comfluent.	Do.
Successfully vaccinated. 32 ..	3	4.	8- 5-50	2	2 Succe-ssful.	11-4-61	..	Modified.	Cured.
		5.	24- 8-60	2	1 Succe-ssful.	25-1-61	..	Do.	Do.
		6.	1- 3-60	2	2 Succe-ssful.	21-1-61	..	Do.	Do.

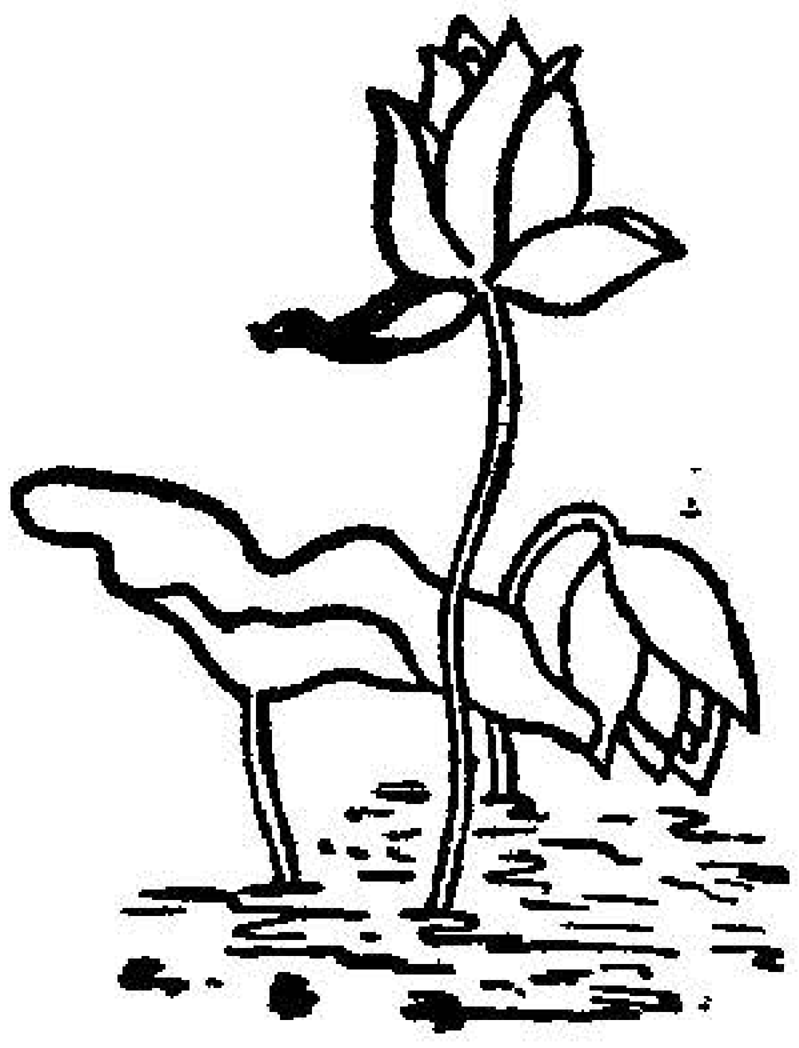
STATEMENT 4.

Showing Neonatal deaths with probable causes that have occurred during the study period compared to those that have occurred in the same Maternity Home in 1958.

Cause of death.	During the study period (17–10–1959 to 26–4–1961). Among the un-vaccinated.	Among the vaccinated.	Total.	1958 (January 1st to December 31st).
(1)	(2)	(3)	(4)	(5)
1 Prematurity, Debility, malnurity, etc.	28	8	36	38
2 Aspyxia	35	1	36	19
3 Diarrhoea	2	1	3	13
4 Broncho-Pneumonia.	1	2	3	5
5 Pyrexia of unknown origin	2	1	3	2
6 Intracranial Haemorrhage	..	..	..	1
7 Hyperpyrexia with convulsions ..	..	2	2	3
8 Septicemia ..	2	1	1	..
9 Congenital Syphillis.	3	..	3	..
10 Jaundice	..	..	..	3
11 Congenital abnormalities	1	..	1	2
12 Lower Respiratory infection	..	1	1	..
13 Pneumonia ..	2	..	2	1
Total ..	74	17	91	87
Total Births ..	2,698			2,558
Neonatal Mortality.	2·9 per cent.			3·4 per cent.

Acknowledgment

The authors acknowledge with thanks the great help rendered by Dr. Mrs. Krishnaswamy, Lady Superintendent, Maternity and Child Welfare Scheme and the Medical Officer in-charge of Choolai Maternity Home and Dr. B. V. Sundarababu, the Health Officer and Sri R. Balasubramanian, the Commissioner, Corporation of Madras, for their invaluable help, guidance and suggestions for carrying out this work.



RADIO—EFFECTIVELY USED IN HEALTH EDUCATION

G. KITTU RAO; B.SC., L.C. & S.E.,
Technical Officer.

Radio Rural Forum (i.e., listening-*cum*-discussion-*cum*-action group) has so far been organised in more than 600 Panchayats in Madras State. But of 15,222 Panchayats in the State, 12,513 Panchayats have been already supplied with community listening sets. The Collector in each district organise the Formus through the Panchayat staff. This is a joint and co-ordinated efforts between the Rural Development Department and the All-India Radio. This Directorate is represented in the advisory committee on Rural Broadcast and the media division has taken this opportunity for including a number of health programmes.

What is a Radio Rural Fourm ?

A Radio Rural Form is a club of about 20 villagers who listen in an organised way to select Radio programmes, for discussion among themselves to increase their knowledge and information and to put into practice some of the things they learnt through this practice. The panchayat union staff are primarily responsible for the effective functioning of this Forum. The member of the Forum listen to the programme and have a thorough discussion on the various points broadcast. When there is any doubt or they require more information, they refer to the All India Radio who in turn send the question asked and the issues raised to the concerned department through the Community Development Department.

Last year Health Education Bureau prepared a detailed script on smallpox in the form of discussion to villagers on various aspects of " smallpox ". This was broadcasted in the Radio Rural forum programme on 27th September 1963. In the subsequent week we received a number of interest questions

from the various Forums functioning in the State through All India Radio. The questions asked are given below. We had a meeting with the various specialists who worked in the programme including Assistant Director in charge of epidemics and Research Health Officer and the questions were discussed in detail and suitable answers were recorded. As one of the questions related to the curative aspect of the disease. We consulted the specialists in Smallpox. Dr. Ramachandra Rao, Superintendent, I.D. Hospital and obtained answers. All this was done in a couple of days and the answers were sent to All India Radio immediately and in the subsequent week, these answers were broadcast. This work was done with the help of two agencies (All India Radio and Community Development).

A number of subjects were thus broadcast through the Radio Rural Forum Programmes. The subjects so far covered are given below:—

Subjects.

Cholera—How to prevent it.
Natural Food—Milk.
Smallpox Vaccination and its uses.
Blood Pressure.
Nimonia Fever (Discussion).
Eradication of Smallpox.
Environmental Sanitation.
Care of a Pregnant mother.
Diphtheria (Discussion).
Family Planning.
General Diseases.
Filariasis.
Cause of Nuicenses of non-cleanliness.
Pure water is better health.
Cleanliness.
Nutrition.
How to destroy Fly.
Guinea Worm disease.

HEALTH PROGRAMMES
IN MADRAS STATE

The Health Programmes of Madras State are under the guidance of Director of Public Health, who works under the Ministry of Health. The Medical functions of the State are under the guidance of Director of Medical Services.

Public Health Programmes in Madras State may be considered under two groups:

1. Basic Public Health Administration.
2. Special Programmes for control of certain communicable diseases.

The Basic Public Health Administration of the State is carried out by an organised set up of Public Health Department of State level, district level and at Primary Health Centre level. A copy of the organisation chart of the State Public Health Department explaining the organisational set up is furnished as an Annexure. The major functions carried out under this pattern are:—

1. *Maternal and Child Health Services.*—Now, there are 2,020 Maternal and Child Health Centres in this State. They are under the technical guidance of District Health Officer.

2. *Vaccination against Smallpox.*—All Panchayat Unions have a Health Assistant whose main function is to give vaccination service to all the villagers. At present there is one Health Asistant for 70,000 population at Panchayat Union level.

3. *Vital Statistics.*—Registration of Births and deaths are done by Village Munsiffs who are the Birth and Death Registrars in all villages. There are about 12,000 regitrars in the State. In Municipal and major Panchayats qualified Health Assistants are appointed as Registrar-Vaccinators.

4. *Control of communicable diseases epidemics.*—The District Health Officer in each district is in charge of this work.

5. *Inspection of licencible trades and factories.*

6. *Inspection of Primary Health Centres and local bodies for Health work.*

Special Programmes that are in operation in Madras State

1. National Malaria Eradication Programme.
2. National Smallpox Eradication Programme.
3. BCG Vaccination Programme.
4. National Filaria Control Programme.
5. Yaws Eradication Programme.
6. Guineaworm Control Programme.
7. Plague control.
8. Training Programmes for Health Visitors, Dhais.
9. Epidemiological Unit with Director of Public Health, Madras.
10. Inservice Training Programmes for Health workers.
11. Research-*cum*-Action Projects.

National Malaria Eradication Programme

There are about 32 Units functioning in the Madras State. This Programme is carried out in 3 phases. The first phase is the attack phase. The attack phase was started during 1959–60. Under this phase, the entire State was covered by D.D.T. spray in the 32 units in 1960–61 and 1961–62.

Under the second phase of the Programme, known as Surveillance Phase in addition to the above concurrent active surveilliance operations are being implemented from 1960–61 by Unit Surveillance Teams. Their function is to make door to door

visits once a fortnight, detect fever cases and treat the positive cases with anti-malaria drugs. Simultaneously passive surveillance operations in the Medical Institutions were also implemented.

The third phase of the programme is known as Consolidation Phase. During this phase the spraying has been withdrawn from about 23 unit areas and spraying is continued in the remaining areas. The active and passive surveillance operations are continued in all the Units during 1963–64. The whole programme is carried on according to the schedule of the National Malaria Eradication Programme.

National Smallpox Eradication Programme

The National Smallpox Eradication Programme was started after having a Pilot Project Scheme in Chingleput District during 1959–60 This Programme was then extended to Madras City and North Arcot district. But the Programme was not successfull in the city because of lack of public support and co-operation. It has since been decided to try the programme once more in the city.

The National Smallpox Eradication Programme was extended to two Revenue Districts and 8 Development Districts from 1st March 1963. The remaining portion of the state will be covered during 1963–64. Thereafter the need for maintenance phase during which the high level of immunity against Smallpox has to be maintained during the entire State. The Programme now is drawn in such a manner that the difficulties encountered and experiences gained in the implementation of National Smallpox Eradication Programme in Chingleput and North Arcot Districts have now been taken into account. Now the scheme is working in all the Panchayat Union areas and municipalities taking them as units. The existing vaccination staff in these areas are strengthened by adequate additional staff. One year of time is given for each Panchayat Union and Municipality to give adequate time for preparation, operation, education and mopping up activities.

During the preparation phase, adequate personnel are posted and trained. Necessary equipments are got ready. The plan of operation is roughly to allow a time of one week for each Unit to cover a population of 2,000. As a first step enumeration of all the families is done. After completion of this job in two days, vaccination is taken up for about three days. The last day is kept for mopping up people left during the previous three days. After a day's rest this Unit moves to the next village or a Unit of population covering 2,000. The Health Inspector, Panchayat Union and the Smallpox Eradication Health Inspector verify the result of vaccination in the very next week so that operation programme will take into account the results of verification as a regular feature. The District Health Officer of the District is in entire charge of the programme in his district. Stress on education is given in all these stages mentioned above to get willing, intelligent co-operation from the public and other departmental staff at the Panchayat Union level and at the village level. Emphasis is made particularly to reach the community through the men leaders groups, women's groups and the school teachers by the health staff. Special training programmes in health education are conducted in each district for the health staff to recognise and put into operation the educational efforts along with the service programme. The Educational programmes were already completed in certain districts, namely, Thanjavur, Madurai and Salem, where this received a good response from the People's representatives as well as the health workers. It is proposed to conduct similar educational training sessions in the remaining districts in which the programme is now under implementation. The Educational Programmes were specially organised by the State Health Education Bureau with the help of Research-*cum*-Action Project at Poonamalli and the Pilot Health Project at Gandhigram in the State.

A new type of flash card stories and picture has been prepared for use at Panchayat Union level in addition to the posters, slides, leaflets and folders supplied to all the local bodies as educational aids. Educational Institutions have been

requested to institute writing competitions on Smallpox and Vaccination. A programme to rural listeners on Smallpox and Vaccination was arranged by All India Radio, Tiruchirappalli.

It is proposed to take up a regular maintenance programme from 1st March 1963 to keep the high level of immunity for a period of five years.

B.C.G. Vaccination Programme

For Tuberculosis control the Mass BCG Vaccination Programme along with Tuberculin Testing has been taken up by the State Public Health Department. The other aspects of Tuberculosis treatment programmes are under the Medical Department of the State. The Mass BCG Vaccination Campaign was inaugurated in 1954 in Madras State. This was started first for the age group 1–25. The staff sanctioned for this Campaign originally consisted of a Supervising Public Health Officer, a Publicity Officer, a cinema operator with six field teams.

With a view to cover the whole susceptible population in the State within the Second Five-Year Plan period, an additional unit consisting of four teams, a Supervising Public Health Officer, a Publicity Officer, 25 Health Inspectors and ancillary staff was sanctioned by Government during 1958. In the first round of the Programme all the districts in the State except Chingleput were covered. Up to the March 1961, 54,06,871 persons were tested with tuberculin and 17,40,912 persons were vaccinated with B.C.G. The second round commences from April 1961 and covered three districts, namely, Salem, Coimbatore and South Arcot districts. The Campaign is now in progress in the districts of Thanjavur and Vellore. During the second round up to the end of August 1963, 2,904,165 persons were Tuberculin tested and 8,28,399 persons were vaccinated with BCG.

National Filaria Control Programme

Another Mass Programme of National importance sponsored by the Government of India is the National Filaria Control Programme. Under this Programme, there are four National

Filaria Control Units in this State at Kumbakonam, Chingleput, Chidambaram and Vellore. They are functioning from 1957–58.

Filaria has been endemic in several districts in Madras State and found to be more widespread in the above mentioned four districts. The problem of filariasis mainly confined to the urbanised rural areas. In the beginning the control operations were designed to control the culicine on the one hand by insecticidal sprays and by destruction of the parasites in the infected persons by administration of the drug, Hetrazan, on the other hand. Anti-larval measures with the use of mosquito larvicidal oil is being carried out in all the Units.

Mass Hetrazan Therapy was started in 1958 and completed in 1960 covering a total population of 12 lakhs. Along with intensive anti-larval work by way of spraying mosquito larvicidal oil is supplemented by closing of cess pools, straightening and lengthening the existing drains to allow free flow of sullege water without stagnation. Systematic larval and adult collection of mosquitos and dissection of culicins for determining infectivity rates were undertaken by Entomological units. Night blood surveys of school going children of age group 5–15 years are carried out regularly to determine the microfilaria rate at intervals. These units also carry on propaganda by film shows, slides and talks.

Yaws Eradication Programme

Yaws is found mainly among the Socio-economically backward communities, namely, Irula Community in the hill areas and Harijan Community. The main reasons for the spread of this disease are lack of personal hygiene and sanitation, non-availability of plenty of water for washing and bathing, poor and scanitly clothing, close contact between members of the family in mall huts, ignorance and poverty. The disease is found in rural areas, but rarely in urban areas. Even among the Harijans and Irulars the disease is disappearing as their Socio-economic condition is improving. In the Third Five-Year Plan the State Government sanctioned a scheme for eradication of Yaws in Coimbatore District. The scheme was implemented

from 1st June 1961. The two Yaws Control Units sponsored by the Central Government under the Harijan Welfare Scheme and the Yaws Surveillance Units Sanctioned by the State Government during 1960 were merged into the newly sanctioned Yaws Eradication Programme.

Under the scheme, there are eight units functioning in Coimbatore district. The total population covered is 2,374,440. Survey is carried out to detect infected persons and they are treated.

Each unit consists of one Health Inspector, one Health Assistant, one Driver and one Peon. A jeep is provided for staff for survey and treatment. A Health Officer is in immediate charge of the scheme. The whole scheme is under the direct control and supervision of the Research Health Officer, working under Director of Public Health. The cases are treated by administration of P.A.M. Contacts of active infectious cases are also treated simultaneously to avoid the spread of infection. The particulars of work done are as follows:—

Number of villages surveyed—1,257.
Number of persons examined—1,225,860.
Number of persons found infected—7,528.

Yaws cases treated—

Active infectious	103
Hyperkerotosis	2,299
Late Yaws	1,005
Inactive late Yaws	2,503
	5,910

Number of contacts of active infectious cases treated	225

Intensive Health Education is carried out in the villages regarding the spread of the disease and how to prevent it. The villagers are advised to keep themselves clean by taking daily bath and keep their premises clean to prevent fly breeding.

Guineaworm Control Programme

The State Guineaworm Eradication Programme was functioning from December 1959 to December 1961 as a Non-Plan Scheme. From December 1961, the Programme was continued as Plan Scheme with a Budget Estimate of Rs. 15 lakhs. The disease is prevalent in all the districts except Nilgiris and Kanyakumari. The guineaworm infected area is divided into six zones, each under a unit headed by an Entomological Assistant. Under each Entomological Assistant there are 3 or 4 Health Inspectors and under each Health Inspector there are 3 to 4 Field Assistants. The programme of work is to treat all the drinking water sources in the infected villages with a suspension of 50 per cent DDT water wettable powder in the proportion of 5 part DDT per millian parts of waters every five to six weeks. By this method the cyclops density is kept at a minimum thereby preventing the spread of infection.

In addition to the chemical treatment to the drinking water sources all the ugineaworm patients were given local treatment with 3 per cent carbolic lotion and dressed suitably. Intensive Health Education is being carried out by the Field staff by way of talks to the villagers at the drinking water sites and in schools and in other gatherings. Practical demonstration of cyclops and how to prevent the guineaworm infestation by the simple method of straining water through a double fold of close meshed cloth and the proper method of straining, etc., are demonstrated to the villagers. large quantities of leaflets, folders and posters are printed and distributed to the staff for use in villages.

Plague Control

Madurai, Coimbatore, the Nilgiris, North Arcot and Salem are the plague endemic districts in Madras State. All these districts, except Madurai lie around Mysore State. Plague in Madurai district (Cumbum Valley) was eradicated by 1940 by a Special Plague Eradication Unit by systematic and repeated fumigation with cyanogas. Similarly plague in the Nilgiris district was also eradicated by the end of 1951 by a Special

Plague Eradication Unit by systematic use of DDT. Since then DDT has been used in all the plague endemic areas in the State and except in Salem district, plague has disappeared from all the other areas.

The infection in Salem district was brought down considerably by systematic and thorough anti-plague measures by the special staff. Although the other plague endemic areas are now free from plague, anti-plague operations are still being carried out in them by special units appointed, solely as a precautionary measure. All the villages in the plague endemic areas are treated with insecticides once in six months.

As per the decisions arrived at the meeting of the Director's of Public Health of Madras, Mysore and Andhra Pradesh held in the Madras Secretariat on 28th May 1962 at which the Honourable Minister for Health, Government of India, presided, Research Health Officer, Madras, was appointed as Special Officer to co-ordinate the anti-plague measures in the plague endemic areas in all the three States of Madras, Mysore and Andhra Pradesh.

So far as Madras State is concerned, thorough and energetic measurers have been taken for the eradication of plague, as recommended by the Plague Co-ordinating Officer.

It is learnt that recently the Mysore and Andhra Pradesh Governments have also implemented the recommendation of the Plague Co-ordinating Officer with slight modifications.

Hosur taluk in Salem district is contiguous to the plague endemic areas in Kolar district (of Mysore State) which has never been free from plague at any time. These two areas, viz., Hosur and Kolar, have free communication with each other.

DDT was used in all the endemic areas in Madras State for the last 12 years or more for the control of plague. Investigations in some of the DDT treated villages showed that the fleas had developed resistance to DDT, due to repeated explosure to

the chemical during the last several years. Therefore, a complete change over in the anti-plague measures was effected from June 1952. The use of DDT has been completely stopped and replaced by BHC. Fleas have been found to be not so resistant to BHC. Cyanogas fumigation of rat burrows has also been started on a large scale.

A series of experiments with several newer insecticide had been tried in different villages in Hosur taluk for over eight months by the Research Health Officer, Madras. It is found that DDT treated villages continue to give very high flea indices 3.2 to 4.9 every month whereas in BHC 10 per cent insufflated villages, the flea index continue to remain, below one or about one, for a period of six months. Other insecticides tried have not given very satisfactory results. Newer insecticides like chlorodine 5 per cent is being tried in one village and observations will be conducted in the next few months to find out its suitability for plague control work.

Each Health Inspector on Plague duty is doing regular flea survey in some selected villages in his division. Special instructions are issued in regard to the Block fumigation of shops and godowns with Cyanogas ' A ' dust. The staff engaged in anti-plague operations are inoculated once in six months.

The National Institute of Communicable Diseases, New Delhi, has deputed an officer with a team for field experiments in Kolar district and also for the co-ordination of plague eradication work in the neighbouring States. The first meeting of the Plague Co-ordination Committee was held at Kolar on the 5th October 1963. The District Health Officers, Salem, Kolar and Chittoor and other officers associated with Plague in the three States of Madras, Mysore and Andhra Pradesh attended the conference. The various problems of the plague control measures were discussed. It was agreed during the conference that—

1. A uniform policy of plague control measures should be adopted in all the three areas following the pattern of work in Salem District.

2. A Weekly Plague report should be sent by each District Health Officer to his opposite numbers and also to Dr. Pattatunda, Plague Co-ordinating Officer, Kolar.

3. The Directors of Public Health, Mysore and Andhra Pradesh may be requested to send some Health Inspectors for training in plague work to Hosur.

4. The grocery shops, godowns, etc., where large numbers of rodent population are expected should be submitted to block fumigation with cyanogas every six months as done in Hosur taluk and other plague endemic areas in Madras State.

5. Two or three villages may be taken by each Health Inspector on Plague duty to do the flea survey in his jurisdiction to find out the development of residence of fleas as is being done in the plague endemic areas in Madras State.

6. A uniform policy regarding payment and other allowances may be adopted for the staff working in plague scheme.

7. Anti-rodent measures by the use of Zinc phosphide should be insituted as a plague control measure and the block staff may be got interested in the work and the same may be carried out through them.

Training Programmes for Health Visitors and Dhais

Health Visitor's Training.—There is a well established school for health visitors in Madras under the Public Health Department. There is provision for training of 50 candidates as Health Visitors with Government stipend. The course of training period is 2½ years. The training includes filed training both in rural and urban maternal and child health centres. The institution is now located in a separate building within the Government Gosha Hospital premises, and is under the charge of a person specially trained abroad in Maternal and Child Health work.

Dhais Training.—Under the Third Five-Year Plan, 1,286 Dhais were trained in our State till 1962. Out of 1,600 Dhais fixed to be trained during 1961–62 and 1962–63, 1,286 Dhais

were trained so far and 625 are under training as on date. The Dhais are trained in Health Unit and in Primary Health Centres in the State.

Epidemiological Unit

A study of the epidemiological features of various infectious diseases is very necessary as communicable diseases are major public health problems. This was the recommendation of the Mudaliar Committee. Accordingly an Epidemiological Unit has been established for the Madras State. An Epidemiologist and Statistician are working in this unit and there is a mobile Laboratory van for the above purpose. At present the unit is investigating in the areas of smallpox and cholera which are prevalent in our State. As the unit has been only recently established the study features are in progress.

In-service Training Programmes

1. *Nutrition.*—All the Health Inspectors of the State Health Department are given inservice training in batches of 30 at the Nutrition Bureau of this department.

2. *Orientation Training.*—Likewise the staff in the Primary Health Centres, namely the Medical Officer, Health Inspectors, the Health Visitors and Maternity Assistants are given two months' Orientation Training in Rural Health by the Orientation Training Centre at Poonamallee for a period of two months. In each batch about 5 to 6 teams are taken up for training. In this programme, the teams from neighbouring States are also taken up at the Orientation Training Centre in Poonamallee as a Regional Centre to cover the needs of the Southern States. The Health Inspectors are given inservice training in leprosy for a period of about one month in small batches.

3. *Inservice Training in Malaria.*—The Central Malaria Laboratory attached to the Director of Public Health gives training to the Health Inspectors and field workers in malaria and filaria work.

4. *Health Education.*—The Health Education Bureau of this department has started a few inservice programmes for certain categories of workers, namely, Mukiya Sevikas from the Community Development Blocks and the Health Inspectors and Health Visitors working in Applied Nutrition Projects.

The Health Education Bureau will shortly be having a training unit to take up such inservice training programmes.

Research-*cum*-Action Projects

There are three units carying on research-*cum*-action in health subjects like Sanitation, leprosy and Nutrition. They are located in Poonamallee, Thanjavur and Dindigul. These projects have used Social Scientists, Health Educators and Public Health Engineers and have demonstrated the value of such multi-disciplined approach to deal with our rural health problems.

RECEIPES ON RAGI

SRIMATHI L. KASTURI, B.SC.,
Office of the Director of Public Health, Madras.

Ragi sweet diamond cuts

	Cost. NP.
Ragi flour, ½ ollock 58 grams	04
Mydha flour, ½ ollock 58 grams	03
Brown sugar, 58 grams	05
Groundnut oil	13
Fuel	03
Total ...	28

Cost of 1 plate—45 grams—7 nP.

Method

Disolve the brown sugar in water. Then mix ragi flour, mydha flour thoroughly and make it into a smooth dough as for the chapathis, by adding the dissolved brown-sugar solution.

Then prepare lime-sized round balls and flatten it in the chapathi wooden plank and cut them into a diamond shaped pieces. Heat the oil in frying pan and fry them till they are golden brown and serve hot.

Protein rich food

Ingredients—

Hand-pounded rice—1 ollock.
Roasted Bengamgram—2 ollocks.
Brown sugar—2 ollocks.
Cardamom—5.

Method:—

Bengalgram and hand-pounded rice are roasted separately and powdered finely and then mixed with the brown sugar in the proportion of 2:1:2.

Cost of per ounce—4 nP.

Nutrient values in one ounce

Protein—2.8 grams.
Fat—0.6 grams.
Carbohydrate—24.4 grams.
Mineral—0.5 grams.
Catories—118.

CONNEMARA PUBLIC